

Job Turnover and Wages in the Retail Sector: The Influence of Wal-Mart

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"Wal-Mart is making enormous profits and yet it has chosen to go with low wages and diminished benefits. . . The battle to engage Wal-Mart and force them to examine their corporate values and policies is absolutely vital to America today."

Senator Barack Obama, November 16, 2006

Rarely has a single corporation experienced the widespread scrutiny of its business practices and impact on local communities, businesses and workers, as has Wal-Mart. Indeed, it is difficult to overstate the tone and breadth of the current debate. That at least three United States Senators have specifically criticized Wal-Marts in the weeks leading up to their entrance in the presidential race speaks to criticality of the Wal-Mart debate.

Disclosure: The author of this study owns no stock in Wal-Mart or any related firm (other than that held by the mutual fund companies Vanguard and TIAA-CREF). I have performed no paid consulting services from any retail firm, its developers, local governments or related entities since 2002 (though I continue to field frequent questions on my earlier research). I have received no honoraria related to Wal-Mart research (other than travel costs paid by the Federal Reserve Bank of Richmond in 2001). In short, except for roughly \$1,500 purchases of diapers annual since 1999 I have no financial relationship with Wal-Mart or any affiliate that I am aware of.

Discussion surrounding Wal-Mart focuses heavily on the role the retailer plays in local employment dynamics, especially wages, job

¹The views expressed in this paper are those of the author and do not reflect the official policy or position of the United States Air Force, Department of Defense or the U.S. Government

turnover, and job creation and destruction in the retail sector. And while there are many other facets to the Wal-Mart debate, these questions matter for policymakers concerned about local economic development and the role changing retail market structure plays on employment opportunity for local residents. While local officials may play a far more muted role in such matters as local retail location decision than they believe, understanding whether or not to expend resources supporting or opposing a Wal-Mart (or any other business) ought to be informed by at least some understanding of the potential net impact. At the heart of the question are an understanding of Wal-Mart's influence on wages for new and existing workers, and how job creation, separation and turnovers are affected by the entrance and presence of a Wal-Mart store.

In this paper I seek to better inform this debate by combining data on Wal-Mart stores with the recently release Quarterly Workforce Indicators provided by the US Census. This unique data set offers much in understanding the role Wal-Mart entrance plays in local labor force dynamics. I begin by reviewing previous studies on the local economic impact of Wal-Mart. I then review the data and offer an empirical model to test the impact of Wal-Mart entrance and presence in eight Pennsylvania counties.

Empirical Analysis of Wal-Mart

Stone's (1988) study of the impact of Wal-Mart on small towns and communities in Iowa was the first attempt to measure the impact of Wal-Mart on local communities. This study and other subsequent analysis by Stone and his co-authors present mixed evidence regarding the impact of Wal-Mart stores. Stone found that counties with Wal-Marts, and host towns generally, experience a sharp, but short term growth in retail. He also concludes that Wal-Mart stores locating outside small towns reduced retail employment and businesses within the small

towns, even if the overall impact was positive.² Unfortunately, Stone's study suffered serious methodological limitations that fatally weaken the policy inference. Two of his important failures were largely replicated by many subsequent authors. The first is the absence of variables to control for other factors that may have led to retail decline. Iowa in particular, and many other locations studied were in the midst of significant population changes that could explain much of the retail changes Stone attributes to Wal-Mart. Second, the treatment of potential endogeneity was entirely absent in work performed through the 1990's. Thus any potential conclusion regarding Wal-Mart's impact may well suffer the bias caused by Wal-Mart's entrance decision being influenced by existing retail growth patterns.³ Thus, the decade of the 1990's passed with little useful advancement of our understanding of Wal-Mart's impact.

In 2001, Hicks and Wilburn, in one of the first of the econometric studies, analyzed a panel of county level data in West Virginia from 1988 through 2000, testing the impact of Wal-Mart's presence on retail industry structure, wages and employment. The model included corrections for spatial autocorrelation and entrance of Wal-Mart in adjoining counties, which accounts for the pull factor considerations noted by Stone (1995). This study found that the entrance of a Wal-Mart store led to a modest increase in the number of

²See Stone (1989, 1995, 1997) these papers restate many of the same findings, but with further analysis of the cause and the interim changes to the state of the literature. Also see Stone, Artz and Myles (2002). These studies also offer both policy guidance and recommendations for retailers coexisting with Wal-Mart.

³See Keon, Robb and Franz;, Ozment and Martin (1990) (who acknowledged the endogeneity concern), Barnes and Connell (1990); Ketchum and Hughes (1997); Hornbeck (1994); McGee and Gresham (1995); Artz (1999); Artz and McConnon (2001); Stone, Artz and Miles (2002); Mehta, Baiman and Perskey (2004) as examples of studies that did not test for or remedy endogeneity bias.

retail establishments, a permanent retail employment increase of roughly 54 workers and no impact on retail wages.

Hicks and Wilburn (2001) evaluated endogeneity of the Wal-Mart entrance decision by testing entrance on contemporaneous and lagged growth variables. This is similar to the method used by Franklin (2001), who examined the Wal-Mart Supercenter impacts on the structure of grocery stores in metropolitan areas. Both studies concluded empirically that Wal-Mart entrance decisions are independent of regional growth conditions. Also, these researchers offered anecdotal evidence that Wal-Mart is largely unconcerned with local economic conditions when making decisions to open new locations. However, this approach has been criticized for failing to include an endogeneity test within the estimation framework (Curs, State and Visser, 2004). Also, criticism of the general nature of the results has been raised since West Virginia, the study region, is poorer and more rural than average states.⁴

Basker (2005) performed a similar analysis of a much larger sample of U.S. counties. This analysis used an instrumental variable method to control for endogeneity with the planned entrance date as an instrument. This study reports that following an initial increase in retail employment, within roughly three years this dissipates to a 55-worker increase, with a modest reduction in the number of small retail firms. Basker also found very modest impacts of Wal-Mart entrance on adjoining counties. The concordance of these employment findings to those of Hicks and Wilburn (2001) was highlighted by Villareal (2005).

Basker has been criticized for instrumental variable choice (Curs, State and Visser, 2004); though I believe this criticism is misplaced, and have demonstrated in a later study (Hicks, 2007) that the

⁴See www.preservationist.net/sprawl for a remarkably balanced review by an advocacy group of this and other studies.

resulting estimates are not particularly sensitive to the choice of instrument. More credible concern about this study surrounds the censoring of the sample (counties with employment levels above 1,500 in 1964, with positive employment growth and without a Wal-Mart prior to 1977). This censoring of the data eliminates from consideration virtually all of the counties with urgent and compelling policy concerns (Goetz and Swaminathan, 2004). This latter criticism also raises the specter of selection bias problems in the study as earlier research (Graff, 1998) which identified a specific expansion pattern for Wal-Mart Supercenters in mid-sized towns that may well have been censored by Basker. Further, failure to control for interstate fiscal differences may offer a different endogeneity concern as states with high levels of local financing may actively seek Wal-Mart stores (Wassmer, 2002). Of greater concern than these issues is the absence of a correction for spatial autocorrelation in the model providing concern of bias in the estimation results.

The impact of Wal-Mart on economic well being, measured differently than through retail wages was performed by Goetz and Swaminatham (2004), in an evaluation of countywide poverty impacts of Wal-Mart's presence. This study is important in addressing a major criticism of Wal-Mart in general, and changing retail structural conditions perhaps evidenced by the increase in the number of Wal-Mart stores around the nation.

The authors estimated poverty rates in two time periods, thus permitting a much richer choice of explanatory variables than are typically employed in more dynamic time series models.⁵ Employing a two stage estimation technique, which should account for some

⁵The choice of the two time period model permitted the use of more detailed (but less frequently collected) Census and USDA data on poverty and regional population characteristics.

endogeneity concerns, the authors found that a new Wal-Mart, entering a county between 1987 and 1998 had a marginal impact of 0.2 percent on the county poverty rate, and that stores that existed prior to 1987 increased the poverty rate by just under half that amount.

The authors attribute this effect to three possible causes. First, the loss of “mom and pop” retail employment may cause workers to settle for less well paying jobs (though they acknowledge the extensive criticism leveled at this argument). Second, philanthropy by Wal-Mart may be less than the incumbent firms. Third, which they argue is the most important: Wal-Mart would weaken local entrepreneurship resulting in greater poverty through a chain of leadership and social capital.

There are two major concerns with this study. First, the magnitude of the poverty impact of Wal-Mart estimated by these authors is small at 0.099 percent for existing Wal-Marts and 0.204 percent for new Wal-Marts respectively, and was not fully elaborated. This is in contrast to a strong discussion of the potential causes. Perhaps the greatest flaw in this study is the incomplete development of the assertion that the poverty result implies an externality of exchange at Wal-Mart. While this is a convenient method of explaining possible policy interventions, it is more likely that Wal-Marts behavior is better explained as a result of public choices rather than a market failure.⁶ Importantly, neither weakness impugns the empirics, only the potential policy interventions that may be inferred from their findings. Notwithstanding this criticism, Goetz and Swaminathan (2004) offer an

⁶As I have said earlier, I believe the claims of benefit based externalities are on very shaky theoretical ground. Even the most compelling of these arguments (Waddoups, 2004) asserts market failure for employer based health insurance in the construction industry based upon an argument of scale economies in the provision of private sector health insurance (both in financial access and firm production costs).

important study in that while acknowledging that earlier research has found little of the criticism of Wal-Mart to enjoy empirical support, it has examined a more extensive set of regional issues.

Neumark, Zhang and Ciccarella (2006) conducted the most extensive analysis of Wal-Mart's effect on labor markets in the United States, identifying the Wal-Mart presence model using an instrument that was composed of a function of the time and distance from Wal-Mart's original 1962 store in Bentonville. The reasoning behind this clever instrument is that the combination of time and distance provides a good predictor of Wal-Mart's location decision that should be independent of local growth conditions. They found retail employment decreases, overall employment decreases and a general wage decline associated with Wal-Mart. This is a quite different finding than that of Hicks and Wilburn (2001) and Basker (2005). I posit that this is partly due to geographic idiosyncrasies (most particularly related to local share of taxes) that make inter-state estimates hazardous. But, sample choice from all three studies suffers some significant concern.

Sobel and Dean (2006) evaluated the impact of Wal-Mart presence on small businesses in the United States using a spatial autoregression. They found no impacts, at the state level on the number or share of small businesses that could be attributed to Wal-Mart. Further, they extrapolated the results of Stone's (1989) paper through the 1990's finding an implausibly large (and historically counterfactual) decline in small businesses in Iowa. These findings were extended by Hicks (2007b) in which a replication of Stone's model yielded no meaningful correlation between Wal-Mart's entrance and small businesses in Iowa.

In a paper designed to rigorously compare the performance of the instrumental variable technique, Hicks (2007) compared estimates of instrumental variable approaches using approximation of Basker's instrument and that of Neumark, Zhang and Ciccarella's and a new one derived from a Public Radio interview with a Wal-Mart official who suggested local market size dictated location. While I found very weak

evidence of endogeneity across more than a dozen measures of county level economic activity in my sample region (Maryland), I also found that the instruments performed very similarly across types.

Finally, Hicks (2007) estimated Wal-Mart's entrance decision by optimizing a distance function from a new Wal-Mart to its most proximal planned neighbor subject to local market condition constraints. In this model, I find Wal-Mart varies the spatial separation of stores due to population density and incomes.

These studies have not generated a consensus impact, with ranges of labor market effects running from a few retail jobs gained (perhaps 50), to a significant loss of employment, greater than Wal-Mart's own labor force in a store. However, the better of these studies that finds a loss of retail also finds increases in overall employment in Wal-Mart counties. So, despite growth in the technical quality of the research, much needs to be done to fully understand Wal-Mart's impact.

One possible extension of these studies is to test, on more frequent data, employment dynamics and wages. The creation and dissemination of the US Census' Longitudinal Employer – Household Dynamics database offers a remarkable opportunity to evaluate Wal-Mart's role in a highly disaggregated setting. The key source for data is the Quarterly Workforce Indicator dataset maintained by the Census.

Quarterly Workforce Indicators and Wal-Mart

The explosion of analytical possibilities created by the Longitudinal Employer-Household Dynamic Program (LEHD) at the US Census Bureau cannot be overstated. Beginning with Davis, Haltiwanger, and Schuh (1996) analysts have developed much improved econometric techniques (Abowd, Creedy, and Kramarz, 2002) and have attempted to answer much more sophisticated questions than was previously possible (Lane, Burgess, and Theeuses, 1998). Though these data continue to offer much for researchers, accessing the data in its

fullest form (consistent with Census privacy constraints) makes some uses restrictively resource intensive. In order to bridge this gap, a publicly available set of data, an extension of the LEHD the Quarterly Workforce Indicators (QWI) is available for several states from 2001 through early 2005.⁷

The QWI data offer gross, not net, job flows and calculated weekly wages for both existing and new workers. This data set also offers job turnovers. The data is parsed by industry (1-2 digit NAICS or SIC), age category, gender, firm type (private or all firms), at the county, MSA or state level. The resulting series, though more aggregated than other LEHD data, offer the potential to explain a number of workforce dynamics not addressed by other publicly available data sources.

The chief limitation of the QWI data is its recent introduction, and that it is currently limited to only 20 states. Those have proven especially problematic for analysis of Wal-Mart entrance, since the retail giant has a well known proclivity for entering states and expanding operations in rapid bursts (see Hicks, 2005). Thus, I was able to match only one state with Wal-Mart entrance in the middle of the 2001-2005 QWI data—Pennsylvania. And, even in this state, only eight counties saw new Wal-Mart entrance (with only a total of 10 Wal-Mart and Supercenter stores). This is however, the population of new Wal-Marts in the State during the available time period, not a sample. Following findings by Wassmer (2002), who concluded cross-state fiscal structures influenced the location decision of big-box retailers, I have safely confined my analysis to a single state. Summary statistics for the employment dynamics and Wal-Mart, along with descriptions appear in Table 1.

I offer an empirical model of Wal-Mart entrance that closely mimics that of Hicks and Wilburn (2001), Basker (2005), and Hicks

⁷ Full resourcing of these data may not occur until closer to the end of the decade.

Table 1. Data Description and Summary Statistics 2001: Q1 through 2005:Q2

	Mean	Median	Maximum	Minimum	Std. Dev.	Description
Avg. Monthly Earnings	2,009.21	2,047.96	2,716.96	1,454.39	365.56	Total quarterly earnings of all full-quarter employees divided by the number of full-quarter employees, divided by 3.
Avg. New Hire Earnings	1,313.79	1,255.42	2,078.92	877.91	270.93	Total quarterly earnings of all full-quarter new hires divided by the number of full-quarter new hires, divided by 3.
Job Creation	1,133.79	657.50	9,952.00	55.00	1,558.84	The number of new jobs that are created by either new area businesses or the expansion of employment by existing firms.
Net Job Flows	16.27	-10.50	7,507.50	-5,398.00	1,300.00	The number of new jobs that are created by either new area businesses or the expansion of employment by existing firms.
New Hires	3,190.96	1,788.50	18,639.00	186.00	4,123.93	Total number of accessions that were also not employed by that employer during the previous four quarters.
Separations	3,777.34	2,177.50	16,782.00	237.00	4,552.77	Total number of workers who were employed by a business in the current quarter, but not in the subsequent quarter.

Table 1 (cont.) Data Description and Summary Statistics 2001: Q1 through 2005:Q2

	Mean	Median	Maximum	Minimum	Std. Dev.	Description
Turnover	0.13	0.12	0.71	0.07	0.07	Turnover Rate = $(1/2) * (\text{accessions} + \text{separations}) / \text{employment stable jobs}$
Total employment	16,545.68	9,182.5	60,889	1,561	18,221.4	Total number of workers who were employed by the same employer in both the current and previous quarter
Wal-Mart Entrance	0.09	0.00	1.00	0.00	0.29	A binary variable, 1 if Wal-Mart entered country i , in year t , 0 otherwise

Note: earnings are real, adjusted by the GDP Deflator and include a wide range of fringe benefits

(2005). I model changes to employment dynamics and wages as a function of Wal-Mart entrance and presence, economic, seasonal and an autoregressive component. Since this model is a panel of employment dynamics in 8 non-conterminous counties, I use a cross-sectional fixed effects model without spatial considerations. The basic model thus appears as:

$$Y_{i,t} = \alpha_1 + \alpha_i + \beta_1 \text{WMentrance}_{i,t} + \beta_2 \text{WMPresence}_{i,t} + \beta_3 \text{GDP}_t + \beta_4 \text{Recession}_t +$$

$$\dots + \beta_5 Q:1 + \beta_6 Q:2 + \beta_8 \theta_{i,t} \mu_{i,t}; \quad \mu_{i,t} \square i.i.d.N(0, \sigma^2)$$

Equation 1

Where the dependent variable Y , changes with the test to be performed, and α_1 is an intercept and α_i county dummies. The variables WMentrance and WMPresence are entrance dummy and presence count variables for Wal-Mart and Wal-Mart Superstores respectively. The subscripts i , are for each county in time t . I employ three quarter dummies, and an autoregressive component. The GDP data are national, and designed to capture business cycle adjustments, while the recession is a quarterly dummy obtained from the NBER business cycle series. The dependent variables are all for the retail trade sector. There does not appear to be a unit root, though the length of the sampled period is such that tests are not robust, however I employ levels in the estimation.

One advantage of employing a sample in which all counties experience and entrance of a Wal-Mart, all within a year, is that this avoids some of the endogeneity concern expressed by Franklin (2001), Hicks and Wilburn (2001) and Basker (2005). By limiting my estimate to counties that have experienced a new Wal-Mart during this sample period, I rely only upon the exogenous variation in the timing of entrance. This is a technique Neumark, Zhang and Ciccarrella (2006)

employed in their sample. Further, to preclude endogeneity concerns I perform a Hausman test on each of the panels, which consistently rejects endogeneity. Second, I perform an exogeneity test on the entrance of Wal-Mart on county level income growth in all of Pennsylvania's counties from 1990-2004, in a panel model with county fixed effects. Growth rates have no economically or statistically meaningful impact on Wal-Mart's location or timing in Pennsylvania. This is a similar approach used by Franklin (2001), Hicks and Wilburn (2001) and Hicks (2007b). Finally, I execute each model with an identifying equation that lags Wal-Mart's entrance three quarters. These two stage least squares estimates yielded results nearly identical to the simpler ordinary least squares estimates I report. This approach both tests for endogeneity and provides a sample designed to circumvent its effects. To reiterate, I am not arguing that Wal-Mart does not take into account local conditions when entering a market, only that these are not generating endogeneity bias in this estimate. Thus this approach may not hold in other regions.

I assume local labor market idiosyncrasies are fully captured by the fixed effects, and otherwise do not vary across the sample. This motivates a simple ordinary least squares estimator, with only the common heteroscedasticity corrected standard errors. The major concern regarding distributional characteristics involved the turnover rate. To mitigate this concern I transformed the rate into a (0,100) scale and employed a semi-log transformation. The results for the earnings estimates appear in Table 2.

These results suggest that Wal-Mart plays no significant role in influencing wages for existing employees in the retail sector; either statistically through entrance, or economically through its presence (though the latter does enjoy statistical significance, it translates into roughly one more hours wages per month). These findings are similar to those of Hicks and Wilburn (2001), who find no Wal-Mart impact in average retail wages using county level net changes. The effect holds in a more disaggregated series in this analysis. However, for new hires in

Table 2
Wal-Mart Affect on Earnings
(n = 104)

	Average Monthly Earnings	Average New Hire Earnings
	Coefficient (t-statistics)	Coefficient (t-statistics)
C	2059.111 (124.89)	1229.313 (23.29)
Wal-Mart Entrance	-2.41529 (-0.15)	89.15631 (1.88)
	13.00027 (1.73)	-14.6503 (-0.54)
GDP	-1.49E-05 (-1.27)	-4.55E-05 (-1.61)
Recession	-16.8091 (-1.04)	-9.83796 (-0.25)
Q1	-107.693 (-6.08)	182.3455 (5.09)
Q2	-59.4259 (-5.20)	91.15887 (4.483)
Q3	-24.266 (-1.67)	33.13275 (2.28)
AR(1)	0.057813 (0.933)	0.322688 (3.36)
Adj R - 2	0.99	0.90
F-statistic	2304.68	66.46
D - W statistic	1.92	1.78

Note: county fixed effects not reported.

the retail sector, Wal-Mart entrance is associated with a roughly \$90 increase in monthly earnings, which is non-trivial increase of more than 3.5 percent.

Turning our attention to employment dynamics, the accounting for employment changes attributable to Wal-Mart in this estimation appear in Table 3.

These estimates tell a much more compelling story about Wal-Mart and local labor market dynamics than earlier studies. First, job creation, or new jobs in new and existing firms suffers a reduction of roughly 140 workers due to the entrance of a Wal-Mart.

Net job flows are unaffected by the entrance of a Wal-Mart, but increases with a Wal-Mart presence at the rate of nearly 120 jobs, but with a statistical significance outside the generally accepted levels. New hires experience a transient jump of roughly 180 jobs in the quarter Wal-Mart opens. This would be consistent with the initial hiring by Wal-Mart. Anecdotal evidence suggests that many Wal-Marts hire employees from competing stores, primarily other similar retailers such as K-Mart, Ames, and Dollar General Stores (though I do not know if any of these were present in these counties during this period).

Importantly, separations (or job losses) are unaffected by Wal-Mart's entrance, but decline substantially thereafter, with on average 150 fewer separations per quarter. Total employment sees a one quarter decline of roughly 180 jobs, but rebounds slightly in the subsequent quarter, but again with very weak statistical significance. (Recall that total employment measures the stationary employment across firms from one quarter to the next, not total jobs in the industry.) The net effect of the dynamics is an increase in employment of a little more than fifty jobs in a year. This is a remarkable similarity in magnitude to the findings of Hicks and Wilburn (2001) and Basker (2005).

Importantly, employment appears to stabilize, with a significant decline in the rate of turnover due to Wal-Mart's entrance (almost 4 percent quarterly) which adjusts to Wal-Marts presence of a decline of

Table 3
Wal-Mart and Employment Dynamics
(n = 104)

Variable	Job Creation		Net Job Flows		New Hires		Separations		Total		Employment		Turnover	
	Coefficient (t-statistic)													
C	1355.06 (18.62)	-98.6723 (-1.24)	3064.427 (20.78)	3815.3 (125.40)	3064.427 (20.78)	3815.3 (125.40)	16714.76 (307.7)	16714.76 (307.7)	2.511047 (111.5)	2.511047 (111.5)	2.511047 (111.5)	2.511047 (111.5)	2.511047 (111.5)	2.511047 (111.5)
Wal-Mart Entrance	-143.83 (-2.01)	30.49821 (0.27)	181.3526 (1.76)	-55.3669 (-0.53)	181.3526 (1.76)	-55.3669 (-0.53)	-181.651 (-2.30)	-181.651 (-2.30)	-0.03838 (-2.22)	-0.03838 (-2.22)	-0.03838 (-2.22)	-0.03838 (-2.22)	-0.03838 (-2.22)	-0.03838 (-2.22)
Wal-Mart Presence	71.78703 (1.18)	119.1457 (1.46)	-177.357 (-1.22)	-149.815 (-3.20)	119.1457 (1.46)	-177.357 (-1.22)	47.34926 (1.46)	47.34926 (1.46)	-0.05 (-4.15)	-0.05 (-4.15)	-0.05 (-4.15)	-0.05 (-4.15)	-0.05 (-4.15)	-0.05 (-4.15)
GDP	-0.00018 (-1.36)	-0.00031 (-2.09)	-0.00011 (-0.51)	-5.80E-05 (-1.44)	-0.00011 (-0.51)	-5.80E-05 (-1.44)	-7.90E-05 (-1.62)	-7.90E-05 (-1.62)	9.29E-09 (-0.01364)	9.29E-09 (-0.01364)	9.29E-09 (-0.01364)	9.29E-09 (-0.01364)	9.29E-09 (-0.01364)	9.29E-09 (-0.01364)
Recession	-51.7735 (0.74)	-24.1028 (-0.12)	-262.66 (-1.46)	-146.423 (-3.37)	-262.66 (-1.46)	-146.423 (-3.37)	111.333 (2.55)	111.333 (2.55)	-0.01364 (-0.66)	-0.01364 (-0.66)	-0.01364 (-0.66)	-0.01364 (-0.66)	-0.01364 (-0.66)	-0.01364 (-0.66)
Q1	-225.483 (-2.40)	126.9711 (1.39)	197.9209 (2.06)	8.787816 (1.03)	197.9209 (2.06)	8.787816 (1.03)	-86.3034 (-2.56)	-86.3034 (-2.56)	-0.01106 (-0.55)	-0.01106 (-0.55)	-0.01106 (-0.55)	-0.01106 (-0.55)	-0.01106 (-0.55)	-0.01106 (-0.55)
Q2	-170.8 (-5.04)	206.6218 (1.63)	418.4632 (3.43)	334.2003 (15.07)	418.4632 (3.43)	334.2003 (15.07)	-77.7514 (-4.50)	-77.7514 (-4.50)	0.005913 (0.73)	0.005913 (0.73)	0.005913 (0.73)	0.005913 (0.73)	0.005913 (0.73)	0.005913 (0.73)
Q3	-153.249 (-1.41)	462.7771 (2.36)	833.2119 (5.41)	236.3251 (7.21)	833.2119 (5.41)	236.3251 (7.21)	-63.4872 (-4.15)	-63.4872 (-4.15)	0.055321 (2.77)	0.055321 (2.77)	0.055321 (2.77)	0.055321 (2.77)	0.055321 (2.77)	0.055321 (2.77)
AR(1)	-0.19696 (-1.97)	-0.15889 (-1.52)	-0.0394 (-0.17)	0.045706 (0.44)	-0.0394 (-0.17)	0.045706 (0.44)	0.326184 (1.82)	0.326184 (1.82)	0.130248 (1.71)	0.130248 (1.71)	0.130248 (1.71)	0.130248 (1.71)	0.130248 (1.71)	0.130248 (1.71)
Adj R-2	0.68	0.10	0.91	0.95	0.91	0.95	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
F-statistic	15.78	1.82	76.11	132.87	76.11	132.87	2216.6	2216.6	687.53	687.53	687.53	687.53	687.53	687.53
D-W statistic	2.16	2.13	2.09	1.92	2.09	1.92	1.50	1.50	1.97	1.97	1.97	1.97	1.97	1.97

roughly 5 percent. Thus Wal-Mart has a dramatic effect on workforce stability, accounting for more than a remarkable 40 percent reduction in net employment turnover. This impact is preserved even with increases in the autoregressive lag length and the inclusion of a trend.

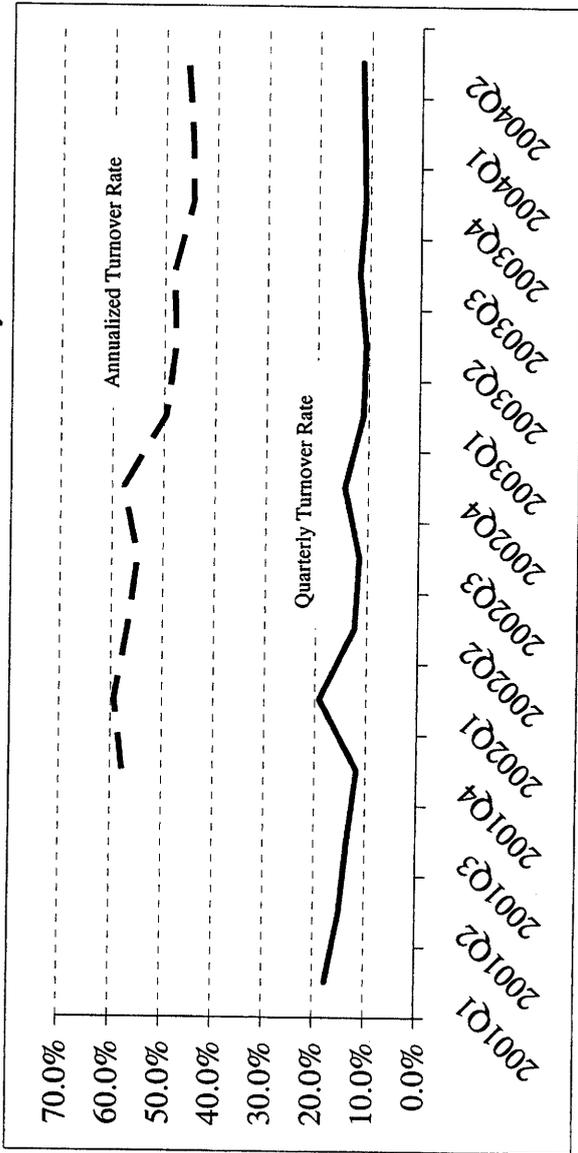
The high turnover in firms was among the most compelling findings in Davis, Haltiwanger and Schuh's (1996) initial description of the LEHD data elements (though they focused on manufacturing in the Longitudinal Employer Database, a precursor to LEHD). In these Pennsylvania counties (as indeed is common throughout the county) the retail trade sector experiences a great deal of annual turnover, ranging from almost 60 to roughly 45 percent of workers in the industry. See Figure 1.

The finding that Wal-Mart is associated with reductions in the turnover rates in the retail sector challenges many oft repeated descriptions of the firm (see for example, Lichtenstein, 2005). The employment data otherwise reinforces earlier research, albeit with a much more useful explanation of the dynamics associated with the retail sector in the wake of Wal-Mart's entrance. Thus the findings of Hicks and Wilburn (2001) and Basker (2005) whose use of annual data suggests that Wal-Mart has at worst no negative net employment effects, and at best a modest (roughly 50 job) net increase in retail sector employment remain intact. However, this analysis tells us more about how employment dynamics are decomposed at the county level to accommodate Wal-Mart stores. There is a trade-off of jobs when Wal-Mart enters the market. There are net increases in net new hires, offset by an initial reduction in job creation. Job creation rebounds, and there is a marked longer term reduction in separations and turnovers in the retail sector. These effects net to a low positive value over roughly a year a finding consistent with earlier research. Finally, the wage impact on existing workers is insignificant, while new hires enjoy a roughly \$90 per month premium, suggesting that overall earnings (if not hourly wages) improve by just over 6 percent when Wal-Mart enters the market.

Summary and Discussion

There are myriad issues considered in the policy debate surrounding Wal-Mart. The impact of the retailer on labor markets is among the loudest in the policy debate. This paper evaluated some of those related to

Figure 1. Retail Employment Turnover Rates in Select Pennsylvania Counties



employment dynamics, job turnovers and compensation. As mentioned above we find net employment impacts of Wal-Mart on the retail sector to be consistent with the earlier studies (Hicks and Wilburn, 2001; Basker, 2005). There is modest local employment reallocation at the county level, which nets to very modest positive increases when aggregated over a year. I find no impact on compensation for current employees, but see a small, but non-trivial increase in compensation for new hires (roughly 6 percent) in the quarter Wal-Mart enters the market. This translates into a boost in total compensation for new hires of roughly 50 cents per hour (per full time equivalent). Whether this occurs at Wal-Mart or in other stores is not determinable with these data. Wages for new hires in subsequent quarters are unaffected (they do not continue to grow in subsequent quarters). The most remarkable impact however, is a marked reduction in employee turnover in the retail trade sector. The coefficient estimates that Wal-Mart is responsible for the over 40 percent reduction in observed employee turnover. Whether this is a marketplace effect (tighter labor markets) or due to firm or industry wide efforts to reduce employment transactions costs is unobservable in these data. Anecdotal evidence exists to support (but not test) both of these hypotheses.

In total, the employment dynamic findings and the wage findings are not inconsistent with earlier research, and suggest that criticisms of Wal-Mart based on wages and net employment changes are ill founded. The magnitude of the impacts is sufficiently small that policy innovations that attempt to influence Wal-Mart location decisions (either positively or negatively) are ill advised.

The marked reduction in turnovers associated with Wal-Mart entrance serves primarily to refute a number of claims to the contrary by analysts (other than economists) who have made this assertion in a number of settings often absent supporting empirics. And, while lower job turnovers undoubtedly provide benefits to firms, extensions of these benefits to the public in general are not known. Policy adjustments would therefore be unwarranted.

These results serve to evaluate Wal-Mart in the context of an exciting newly available data series which focuses on job dynamics at the county level. As with earlier econometric studies, these findings do not speak to sub-county redistribution that may occur as a result of Wal-Mart. Extending this research

to more counties with available QWI data is warranted. Further, a fuller understanding of the role of firm size, impacts in other sectors, and a more employee based analysis of flows (by age category and gender) would provide important insights into the role Wal-Mart in particular, and changes in retail structure in particular have on communities, their businesses and residents. Finally, any policy recommendations that emanate from this analysis echo Ken Stone's original caution to avoid unintended consequences resulting from efforts to attract or repel Wal-Mart entrance. At this state of our understanding, a policy neutral approach to Wal-Mart is appropriate.

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